

CLAIMS

What is claimed is:

1. A method of improving visibility of information on a display of a portable
5 electronic device comprising:
 measuring ambient light with light detection electronics located on the
 portable electronic device; and
 adjusting the display on the portable electronic device based on the
 measured ambient light.
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2. The method of claim 1 wherein measuring the ambient light with light
detection electronics comprises:
 detecting ambient light with a light sensor; and
 defining the detected ambient light as the measured ambient light.
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3. The method of claim 2 further comprising averaging the detected ambient
light over a predefined time, wherein defining the detected ambient light as the
measured ambient light comprises defining the average of the detected ambient light
as the measured ambient light.
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4. The method of claim 2 wherein the light sensor is part of a camera.
5. The method of claim 1 wherein adjusting the display on the portable
electronic device comprises adjusting at least one of a size of displayed information,
25 a backlight intensity of the display, and a display contrast based on the measured
ambient light.

6. The method of claim 5 wherein adjusting the size of the displayed information based on the measured ambient light comprises increasing/decreasing the size of the displayed information as the measured ambient light increases/decreases.
- 5 7. The method of claim 5 wherein adjusting the backlight intensity of the display based on the measured ambient light comprises adjusting a pulse width modulation duty cycle of the display based on the measured ambient light.
8. The method of claim 5 wherein adjusting the backlight intensity of the display
10 based on the measured ambient light comprises increasing/decreasing the backlight intensity as the measured ambient light decreases/increases.
9. The method of claim 5 wherein adjusting the display contrast based on the measured ambient light comprises adjusting at least one of a font type, font color,
15 and a background color.
10. The method of claim 5 wherein adjusting the display contrast based on the measured ambient light comprises adjusting a bias voltage of the display based on the measured ambient light.
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11. The method of claim 10 further comprising determining a display temperature and adjusting the bias voltage of the display on the portable electronic device based on the measured ambient light and the display temperature.
- 25 12. The method of claim 11 wherein determining the display temperature comprises measuring a temperature of the display.

13. The method of claim 11 wherein determining the display temperature comprises measuring an ambient temperature and determining the display temperature based on the measured ambient temperature.
- 5 14. The method of claim 1 wherein adjusting the display on the portable electronic device comprises adjusting at least two of a size of displayed information, a backlight intensity of the display, and a display contrast based on the measured ambient light.
- 10 15. The method of claim 1 further comprising generating a table of display adjustment values, wherein each display adjustment value corresponds to a different ambient light value.
- 15 16. The method of claim 15 wherein adjusting the display on the portable electronic device based on the measured ambient light comprises:
selecting the display adjustment value from the table of display adjustment values that corresponds to the measured ambient light; and
adjusting the display on the portable electronic device based on the selected display adjustment value.
- 20 17. The method of claim 15 wherein each display adjustment value corresponds to a size of displayed information, a display contrast, or a backlight intensity of the display on the portable electronic device to a different ambient light value.
- 25 18. The method of claim 17 wherein adjusting the display on the portable electronic device based on the measured ambient light comprises selecting a display adjustment value for at least one of the size of the displayed information, the display

contrast, and the backlight intensity of the display from the table of display adjustment values based on the measured ambient light, and adjusting at least one of the size of the displayed information, the display contrast, and the backlight intensity based on the selected display adjustment value(s).

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19. The method of claim 1 wherein adjusting the display on the portable electronic device based on the measured ambient light comprises automatically adjusting the display on the portable electronic device based on the measured ambient light.

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20. The method of claim 1 wherein adjusting the display on the portable electronic device based on the measured ambient light comprises receiving a user input and adjusting the display on the portable electronic device based on the measured ambient light in response to the user input.

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21. The method of claim 1 further comprising adjusting at least one of a gamma setting, a white point setting, and a black point setting of the display on the portable electronic device based on the measured ambient light.

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22. The method of claim 1 further comprising adjusting a second display on the portable electronic device by using a conversion standard to convert display adjustment parameters generated based on the measured ambient light for a first display on the portable electronic device to display adjustment parameters for the second display on the portable electronic device.

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23. The method of claim 1 wherein the display on the portable electronic device comprises one of a liquid crystal display, a thin film transistor display, a thin film diode display, an organic light emitting diode, and a super twisted nematic display.

24. A portable electronic device comprising:
light detection electronics located in the portable electronic device for
determining a measured ambient light; and
a display controller for adjusting a display on the portable electronic device
5 based on the measured ambient light.
25. The portable electronic device of claim 24 wherein the display controller
comprises a size controller for adjusting a size of displayed information based on the
measured ambient light.
- 10 26. The portable electronic device of claim 24 wherein the display controller
comprises a backlight controller for adjusting a backlight intensity of the display
based on the measured ambient light.
- 15 27. The portable electronic device of claim 26 wherein the backlight controller
adjusts a pulse width modulation duty cycle of the display to control the backlight
intensity of the display based on the measured ambient light.
- 20 28. The portable electronic device of claim 24 wherein the display controller
comprises a contrast controller for adjusting a display contrast based on the
measured ambient light.
- 25 29. The portable electronic device of claim 28 wherein the contrast controller
adjusts at least one of a font type, a font color, and a background color based on th
measured ambient light.

30. The portable electronic device of claim 28 wherein the contrast controller adjusts a bias voltage of the display to control the display contrast based on the measured ambient light.
- 5 31. The portable electronic device of claim 28 further comprising a temperature sensor for determining a display temperature.
32. The portable electronic device of claim 31 wherein the contrast controller adjusts the bias voltage of the display based on the measured ambient light and the
10 display temperature.
33. The portable electronic device of claim 31 wherein the temperature sensor measures the display temperature.
- 15 34. The portable electronic device of claim 31 further comprising a temperature processor for determining the display temperature from an ambient temperature measured by the temperature sensor.
35. The portable electronic device of claim 24 further comprising a memory circuit
20 for storing at least one table of display adjustment values, where each display adjustment value corresponds to a different ambient light value.
36. The portable electronic device of claim 35 wherein the display controller selects the display adjustment value corresponding to the measured ambient light
25 from the table of display adjustment values and adjusts the display on the portable electronic device based on the selected display adjustment value.

37. The portable electronic device of claim 35 wherein the memory circuit stores a table of display adjustment values for each of at least one of a size of displayed information, a display contrast, and a backlight intensity of the display.
- 5 38. The portable electronic device of claim 24 further comprising a user input device for directing the display controller to adjust the display on the portable electronic device based on the measured ambient light.
39. The portable electronic device of claim 38 wherein the user input device
10 comprises a control button disposed on a housing of the portable electronic device.
40. The portable electronic device of claim 38 wherein the user input device comprises a speaker for receiving an audible display command from the user.
- 15 41. The portable electronic device of claim 24 wherein the display controller automatically adjusts the display on the portable electronic device based on the measured ambient light.
42. The portable electronic device of claim 24 wherein the light detection
20 electronics comprises a light sensor for detecting ambient light.
43. The portable electronic device of claim 42 wherein the light detection electronics further comprises a light processor for processing the detected ambient light and determining the measured ambient light from the processed ambient light.
- 25 44. The portable electronic device of claim 24 wherein the light detection electronics are part of a camera assembly.

45. The portable electronic device of claim 24 wherein the portable electronic device comprises one of a laptop computer, a calculator, a personal data assistant, a portable gaming system, and a portable music player.

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46. The portable electronic device of claim 24 wherein the portable electronic device comprises a cellular telephone comprising a transceiver for transmitting and receiving wireless communication signals.

10 47. The portable electronic device of claim 46 wherein the light detection electronics are disposed in a camera assembly within the cellular telephone.

48. The portable electronic device of claim 24 wherein the display comprises one of a liquid crystal display, a thin film transistor display, a thin film diode display, an
15 organic light emitting diode, and a super twisted nematic display.

49. The portable electronic device of claim 24 further comprising a second display on the portable electronic device, wherein the display controller adjusts the second display by using a conversion standard to convert display adjustment parameters
20 generated based on measured ambient light for a first display on the portable electronic device to display adjustment parameters for the second display on the portable electronic device.

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